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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,444	01/14/2005	Steven T. Fink	264226US6YAPCT	8784
22850	7590	07/10/2007	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			CHANDRA, SATISH	
			ART UNIT	PAPER NUMBER
			1763	
			NOTIFICATION DATE	DELIVERY MODE
			07/10/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/521,444

Applicant(s)

FINK, STEVEN T.

Examiner

Satish Chandra

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 44 - 68 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 44 - 68 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 44, 48 – 53, 55, 56, 62 – 66 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komino (US 6,634,845) in view of Agner et al (US 2001/0041143) and Sherman (US 5,916,365).

Komino discloses a processing chamber (Fig 1) comprising:

Regarding claims 44, 48 – 53, 56 and 62 - 66, a processing vessel (chamber) PC having a lower wall (not labeled) and a side wall (not labeled) having a plurality of pumping ports (not labeled) disposed along the periphery of the floor separated from each other, symmetrically spaced about a chuck assembly 84, and each pumping port connected to a pump cell 88 (Fig 16, Column 14, lines 42 - 64).

Regarding claims 55 and 68, an upper electrode 93a (Fig 17) to facilitate the formation of plasma.

Komino does not disclose:

Regarding claims 44 and 56, at least one pumping cell, integrally including a pump and a valve, coupled to a first pumping port; and

the at least one pumping cell can be removed from the first pumping port and coupled to a first different pumping port,

Agner et al discloses:

Regarding claims 44 and 56, a pump 1 integrated in a valve arrangement 2 within the housing 3 (Para 0027)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the pumping cell of Komino et al with the integrated pump and valve assembly of Agner et al in the apparatus of Komino et al.

The motivation for replacing the pumping cell of Komino et al with the integrated pump and valve assembly of Agner et al is to provide an alternate and equivalent pump and valve assembly as taught by Agner et al.

Komino et al and Agner et al do not disclose:

at least one seal coupled to second pumping port and,

the at least one seal can be removed from the second pumping port and coupled to a second different pumping port such that an arrangement of the at least one pumping cell and the at least one seal is reconfigured.

Sherman discloses:

In Fig 1, a reactor vessel 2 closed at one end by a flange 4 which connects to a vacuum pump 38 through a pneumatically operated solenoid gate valve 36 wherein each flange has an o-ring seal 6 to allow vacuum operation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide o-ring seals on every flange in the apparatus of Komino et al and Agner et al as taught by Sherman.

The motivation for providing o-ring seals is to improve sealing capabilities in the apparatus of Komino et al and Agner et al as taught by Sherman.

Claims 45 – 47 and 57 – 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komino (US 6,634,845) in view of Agner et al (US 2001/0041143) and Sherman (US 5,916,365) as discussed in claims 44, 48 – 53, 55, 56, 62 – 66 and 68 above and further in view of Dandl et al (US 2001/0016166) and Fink (US 7,163,603).

Komino, Agner et al and Sherman do not disclose:

Regarding claims 45 and 57, the side-wall has a height of at most about four inches.

Regarding claims 46, 47, 58 and 59, process chamber is made of a plate stock of aluminum having a thickness of about four inches.

Dandl et al discloses:

Regarding claims 45 and 57, the vertical height of the space between a substrate and a partition wall 4 is of the order of 10.2 cm (about 4 inches, Para 0124, Fig 1).

Fink discloses:

Regarding claims 46, 47, 58 and 59, the plates of the housing 150 (Fig 2) of an inductively coupled plasma (ICP) source assembly 110 are made from aluminum plate stock and can be formed of various thickness depending upon the source size and process requirements.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the vertical height of the side wall about four inches; make the process chamber from a plate stock of aluminum having a thickness of about four inches in the apparatus of Komino, Agner et al and Sherman as taught by Dandl et al and Fink respectively.

The motivation to provide a side wall with a height of about four inches is to optimize the size of the process chamber in order to minimize fabrication and other costs in the apparatus of Komino, Agner et al and Sherman

The motivation for making the process chamber from a single stock of aluminum plate is again to minimize fabrication costs in the apparatus of Komino, Agner et al and Sherman.

Claims 54 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komino (US 6,634,845) in view of Agner et al (US 2001/0041143) and Sherman (US 5,916,365) as discussed in claims 44, 48 – 53, 55, 56, 62 – 66 and 68 above and further in view of Carducci et al (US 2003/0038111).

Komino, Agner et al and Sherman do not disclose:

Regarding claims 54, the process chamber is configured to have a chamber liner configured to reduce the open volume within the process chamber.

Carducci et al discloses:

Regarding claims 54 and 67, chamber liner 104 is disposed as a first liner 134, a second liner 118 and the lid liner 104 (Para 0056) adjacent to walls 106, 108 and the lid 102.

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to install a liner in the apparatus of Komino, Agner et al and Sherman as taught by Carducci et al respectively.

The motivation to provide a liner in the process chamber is to prevent the plasma gases from attacking the process chamber walls in the apparatus of Komino, Agner et al and Sherman as taught by Carducci et al.

Claims 60 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komino (US 6,634,845) in view of Agner et al (US 2001/0041143) and Sherman (US 5,916,365) as discussed above in claims 44, 48 – 53, 55, 56, 62 – 66 and 68 and further in view of Ishii (US 5,685,942).

Komino, Agner et al and Sherman do not disclose:

Regarding claim 60, the step of making the process chamber comprises a molding process.

Regarding claim 61, the lower wall is a plate and the side-wall is a rolled cylinder which is welded into the plate.

Ishii discloses:

Regarding claim 60, a plasma etching equipment 1 (Fig1) includes a processing housing 2 molded into a circular cylinder or a rectangular cylinder out of conducting material such as aluminum (Column 3, lines 30 – 35).

Regarding claim 61, it is well known in the art that two pieces can be joined together by welding.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a molding process for fabricating a process chamber in the apparatus of Komino, Agner et al and Sherman as taught by Ishii.

The motivation for using a molding process for fabricating a process chamber is to provide an alternate and equivalent means of fabricating process chambers as taught by Ishii.

Response to Arguments

Applicant's arguments with respect to claims 44 - 68 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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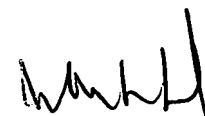
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satish Chandra whose telephone number is 571-272-3769. The examiner can normally be reached on 8 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, Primary Examiner, Jeffrie R. Lund can be reached on 571-272-1437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Satish Chandra



Jeffrie R. Lund
Primary Examiner

SC

6/14/2007